

## December 2005 Update

### California Gulch Superfund Site Leadville, Colorado (5-Year Review Date: 9/28/01)

#### *Highlights Since the 2001 5-Year Review*

- **Record of Decision (ROD) for OU 11 September 2005**
- **ROD for Operable Unit (OU) 6 September 2003**
- **Remedies complete for OU 4, 7 and 8**
- **Land Treatment Unit phase closed December 2002**
- **Partial Deletion (OU 9) complete April 2002**
- **Time Critical Removal of stored chemical containers April 2004**
- **2004 Explanation of Significant Differences addresses historic structures**

**Brief Site History:** The California Gulch site is located approximately 100 miles southwest of Denver, Colorado. Historic activities at the site included mining, mineral processing, and smelting activities. An estimated 26 million tons of ore have been produced at the site, although today the majority of mines are inactive. The Site was listed on the NPL in 1986 because of concerns about the impact of mine drainage waste on surface waters in California Gulch and the impact of heavy metals loading in the Arkansas River. Subsequent studies indicated that surface water contained cadmium, copper, lead, and zinc at levels that exceeded water quality criteria. Soils at the site were found to contain elevated levels of arsenic, zinc, lead, copper, and cadmium. The site has been divided into 12 Operable Units which represent geographic areas of responsibility.

**Cleanup Activities Completed:** The 1994 Consent decree assigned responsibility for cleanup to EPA, ASARCO, Resurrection Mining Company, and the Res-ASARCO joint venture. Construction of the Yak Tunnel treatment plant began in 1990 to improve water quality of the Arkansas River. Other clean-up efforts by responsible parties are designed to:

- \$ Control drainage of acid mine runoff
- \$ Consolidate and cap mine piles
- \$ Cleanup residential soils
- \$ Reuse existing slag piles
- \$ Implement Lake County Community Health Program to educate the public and offer clean-up of residential properties

**Current Status:** Remedial actions are still underway. The Yak tunnel is operational. Since 1995, EPA and the responsible parties have undertaken several Removal Actions at the source areas with the greatest impact to site surface water, and ultimately the Arkansas River. These actions resulted in the consolidation, containment, and control of approximately 350,000 yards of contaminated soils, sediments and mine-processing wastes. As work is completed, EPA is proceeding to delete those portions of the site from the National Priorities List. Plans for site-wide water quality improvements include large-segment stream restoration; mine-pile consolidation and capping, run-on and run-off control of mine-water discharge, and wetlands improvements.

**Summary of Protectiveness:** The remedies for Operable Units 1, 2, 3, 9 and 10 were all found to be protective of human health and the environment. OU 5 and 12 are still in the implementation phase and so protectiveness statements have been deferred until the remedies are complete and operational. Records of Decision were written for OU 6 September 2003 and for OU 11 September 2005.

**Issues Impacting Protectiveness:** Issues that affect protectiveness were identified at Operable Units 3, 5, 9 and 10. For the status of all recommendations made, refer to the following summary table.

<b>California Gulch Superfund Site Five-Year Review 2005 Update Table (Review Date: 9/28/01)</b>				
<b>Issues</b>	<b>Recommendations / Follow-Up Actions</b>	<b>Follow-Up Actions (Status/Due Date)</b>	<b>Status of Follow-Up Actions 12/05</b>	<b>Responsible Party</b>
1. OU1: Diversion structure near the entrance to the Yak tunnel is not collecting sediment	Consider making adjustments to the diversion structure to allow for effective collection of potentially metals laden sediment		The State's goal is to have final water quality standards set for the Arkansas River by 2007.	Resurrection
2. OU 3: The Harrison Street property should be capped or institutional controls (ICs) should be established	Implement institutional controls or cap the property to maintain protectiveness of remedy	An ICO was passed by Lake County Dec. 29, 2004 and then rescinded April 26, 2005.	Negotiations are ongoing to establish Institutional Controls.	EPA
3. OU3: The need for institutional controls for the rail yard would be evaluated	Implement institutional controls as needed	An ICO was passed by Lake County Dec. 29, 2004 and then rescinded April 26, 2005.	Negotiations are ongoing to establish Institutional Controls.	EPA
4. OU 4: Drainage channels are not catching all surface water or acid rock drainage, as water appears to be infiltrating	Complete maintenance or repairs as needed	Completed 10/02	Maintenance on-going.	Resurrection

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5. OU 4: Minor amounts of debris noted in clean water diversions above the Garibaldi Site	Complete maintenance in clean water diversions to remove debris	Completed 10/02	Maintenance on-going.	Resurrection
6. OU 4: Determine if remedial activity is required at Fluvial Tailing Site 4	Monitor improvement in water quality based on other activities in OU 4	Monitor surface water quality in vicinity of Fluvial Site #4. Any additional source work will be performed under OU12. Monitoring is on going.	EPA continues to monitor water quality. Final determination will be stated in OU12 ROD. An Explanation of Significant Differences was issued March 2004 altering a proposed cleanup due to the presence of historical properties.	Resurrection
7. OU 4: Revegetation on portions of North Mike mine waste rock pile removal has not taken, additional seepage as well. Revegetation must also occur near the pile.	Investigate cause of vegetation failure and if the cause is within the North Mike or from another part of OU 4	Completed 10/02	The June 2005 inspection report noted no deficiencies in the North Mike Area following revegetation work by Resurrection	Resurrection
8. OU 4: Water emanating from seeps in Garibaldi sub-basin is still impacted by mining wastes	Investigate cause and the sources of seeps.	Completed 10/02	It is unlikely that seeps in the Garibaldi will stop flowing. It was noted in the June 2005 inspection small cracks in the concrete stream channel which do not impede the channel flow. Water quality in the Arkansas River will be evaluated as part of OU12 by 2007.	Resurrection

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9. OU 4: Improvements must be made to the infiltration gallery at the Printer Girl	Make improvements to infiltration gallery as needed	Completed 10/02	Improvements were made, area appears to be functioning as designed.	Resurrection
10. OU 4: Repair to channel in Upper California Gulch	Make repairs to channel	Completed 10/02	Repairs were made.	Resurrection
11. OU 4: Minor channel repairs throughout OU 4	Make repairs as needed	Completed 10/02	Repairs have been made	Resurrection
12. OU 5: The institutional controls for the EGWA smelters have not been developed	Develop and implement institutional controls	An ICO was passed by Lake County Dec. 29, 2004 and then rescinded April 26, 2005.	Negotiations are ongoing to establish Institutional Controls.	
13. OU 8: Fill from private properties along California Gulch are intruding into the 500 year flood plain	Recommend contacting the Army Corps of Engineers regarding fill material.		Army Corps of Engineers determined that enforcement action was not appropriate for this area.	Resurrection
14. OU 8: Parts of revegetated wetlands along Lower California Gulch associated with the Colorado Zinc-Lead removal have no growth, need replacement	Identify cause and source of conditions that resulted in the vegetation failure. Perform revegetation after cause of failure is mitigated	Completed 10/02	Resurrection plans on adding fertilizer to address poorly established vegetative cover noted in their June 2005 report at Non-Residential Soils in the lower California Gulch.	Resurrection
15. OU 8: Institutional Controls for OU 8 have not been developed	Develop and implement institutional controls.	An ICO was passed by Lake County Dec. 29, 2004 and then rescinded April 26, 2005.	EPA will continue to work with Lake County and Leadville to develop per acceptable institutional control.	Resurrection

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16. OU 9: Residential Waste Piles, Parks and Playgrounds, and outlying areas where no action is necessary have not been deleted from the NPL	Prepare deletion package and propose areas for deletion from NPL	Deleted 04/22/02	Partial deletion is complete.	EPA
17. OU 9: Performance Standards for evaluating the effectiveness of the Lake County Community Health Program have not been established. An independent panel of experts has not convened	Develop performance standards and convene panel of experts to evaluate effectiveness of LCCHP Performance standards finalized 07/30/02. Panel of experts to be convened 2004.		Performance standards have been established.  Panel of experts convened in 2004 confirmed effectiveness of LCCHP with minor recommendations.	Lake County Community Health Program
18. OU 9: Institutional Controls have not been implemented	Implement institutional controls as specified in the ROD	EPA will continue to work with state and local governments to develop and implement an IC.	IC development ongoing	EPA/ County
19. OU 10: Seep flow missing collection channel and pipe outfall due to obstruction from debris and sediment buildup	Perform maintenance as needed	Maintenance work performed 8/02	Maintenance work is completed. Area working as designed.	Resurrection
20. OU 10: Water on floor of pump house should be collected for treatment	Perform maintenance as needed	New pump and tank installed 08/02	Maintenance work completed, everything is working.	Resurrection

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21. OU 10:Vegetation growth on embankment slope below cap deficient	Identify cause and source that resulted in deficient vegetation growth. Revegetate after appropriate corrective measures have occurred to allow vegetation to succeed	Completed 09/02	The June 2005 Inspection Report noted that the vegetation at the Tailing Impoundment was in good condition but that the weir in the diversion ditches was in need of grout repair.	Resurrection
22. Site Wide: There are no Point(s) of Compliance for surface and groundwater	Identify Point(s) of Compliance and sampling locations	Points of compliance to be identified by 12/04	Still working on this issue. Will be re-evaluated during 2006 5-Year Review.	EPA/State/ PRPs
23. Site Wide: Continued impacts appear to be occurring to the aquatic ecosystem from both metals and low pH, primarily in the California Gulch surface water and the Arkansas River, despite completion of many response actions at the site. While site wide water quality appears to be impacted, source remediation work is not yet completed. Progress on this effort should be evaluated at the time of the next five year review	If water quality is still impacted by mining activities upon conclusion of source remediation activities, evaluate impact of contamination and determine if additional improvement is needed. Evaluate potential sources of additional contamination and perform removal and remedies as needed	Re-evaluate at next 5 year review, 09/06	EPA, the State, and PRPs are still monitoring water quality in the River and are conducting site-specific toxicity tests to determine proper end-point for the site.	EPA/ State/ PRPs

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24. Site Wide: Once Point(s) of Compliance and water quality standards are established, a site wide water quality monitoring program should be implemented to evaluate site wide surface water quality. Progress on this effort should be evaluated at the time of the next five year review.	Once Point(s) of Compliance are established the site wide monitoring program should be evaluated to ensure that collected data will provide sufficient information to determine protectiveness of the remedies.	Re-evaluate at next 5 year review 09/06	Still monitoring the site.	EPA/State/ PRPs
25. Site Wide: Institutional Controls are not in place to address arsenic exposure in localized areas of high arsenic concentrations	Identify impact of arsenic exposure and determine if additional actions such as implementation of additional institutional controls are warranted	An ICO was passed by Lake County Dec. 29, 2004 and then rescinded April 26, 2005.	EPA will continue to work with Lake County and Leadville to develop per acceptable institutional control.	EPA/State/ County
26. Site Wide: Institutional controls are not in place to address non-residential soils	Identify and implement institutional controls for non-residential soils	An ICO was passed by Lake County Dec. 29, 2004 and then rescinded April 26, 2005.	EPA will continue to work with Lake County and Leadville to develop per acceptable institutional control.	EPA / County